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REMARKS

Claims 1-3, 5-14, 16-18, 20-23, 25-29, and 31-43 are pending in the present Application. Claims 1, 11, 26, and 42 have been cancelled, Claims 2, 5, 6, 10, 16-18, 20, 40, and 41 have been amended, and Claim 44 has been added, leaving Claims 2-3, 5-10, 12-14, 16-18, 20-23, 25, 27-29, 31-41, 43, and 44 for consideration upon entry of the present Amendment.

It is noted that Claims 2, 5, 6, 10, 16-18, and 20 have been amended merely to correct the dependency of the claims.

Claims 40 and 41 have been amended merely to place the claims in independent form.

Applicants respectfully request that these amendments be entered because they 1) do not raise new issues that would require further consideration and/or search 2) they do not raise issue of new matter; 3) the only new claim presented is Claim 44, which is Claim 42 rewritten as an independent claim; and 4) the amendments place the claims in a better condition for allowance or appeal.

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. §§ 102(b) and 102(e)

Claims 21-22 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by GB 1,252,463 to Hayashi et al. Applicants respectfully traverse this rejection.

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Hayashi et al. fail to teach a method of manufacturing an electrode for an electrochemical cell comprising, *inter alia*, mixing a catalyst material and a support material that is non-oxidizable at anodic potentials of greater than about 1.5 to less than about 4 volts to form the electrode, wherein the support material is selected from the group consisting of metal oxides, carbides, nitrides, niobium, zirconium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one the foregoing support materials. Rather, Hayashi et al. teach making an air electrode by mixing an active carbon, silver and water repellent (page 3, lines 24-40). In other words, Hayashi et al. at least fail to teach any of the

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support materials listed in the Markush group claimed by Applicants. The Office Action notes that Hayashi et al. "teaches making an air electrode by mixing an active carbon support with a silver catalyst and water repellant. The carbon support is inherently non-oxidizable at anodic potentials of less than about 4 volts..." (O.A. page 3) However, Claims 21 and 22 do not claim active carbon support, and the claimed anodic potentials are greater than about 1.5 to less than about 4 volts.

For at least the reason that Hayashi et al. fail to teach the support materials claimed by Applicants, Hayashi et al. fail to teach each and every element of Applicants' independent Claim 21. As such, independent Claim 21 is not anticipated by and is therefore allowable over Hayashi et al. Moreover, as a dependent claim from an allowable independent claim, Claim 22 is by definition also allowable.

Claims 21-22 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by EO 060 051 to Shimamune et al.

As with Hayashi et al., Shimamune et al. fail to teach a method of manufacturing an electrode for an electrochemical cell comprising, *inter alia*, mixing a catalyst material and a support material that is non-oxidizable at anodic potentials of greater than about 1.5 to less than about 4 volts to form the electrode, wherein the support material is selected from the group consisting of metal oxides, carbides, nitrides, niobium, zirconium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one of the foregoing support materials. Rather, Shimamune et al. teach

a gas electrode containing a catalyst containing gold particles dispersed on a conductive oxide carrier such as titanium oxide, and in addition a gas electrode comprising a catalyst comprising electrically-conductive carbon, titanium oxide and gold particles, wherein the gold particles are dispersed on the titanium oxide and both the gold particles and titanium oxide are supported on the electrically-conductive carbon.

(Abstract).

Similar to Hayashi et al., the Office Action relies on a teaching of an active carbon support in Shimamune et al. and that the support would be non-oxidizable at an anode potential less than about 4 volts. Again, however, this is not what is claimed in Claims 21 and 22. In other words, Shimamune et al. at least fail to teach any of the support materials listed in the

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Markush group claimed by Applicants. Since Shimamune et al. fail to teach the support materials claimed by Applicants, Shimamune et al. fail to teach each and every element of Applicants' independent Claim 21. As such, independent Claim 21 is not anticipated by and is therefore allowable over Shimamune et al. Moreover, as a dependent claim from an allowable independent claim, Claim 22 is by definition also allowable.

Claims 1-3, 5-14, 16-18, 20-23, 25-29, and 31 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by U.S. Patent No. 6,183,898 to Koschany et al. Applicants respectfully traverse this rejection.

With regard to Claims 1-3, 5-10, and 16-20, it is noted that the rejection is moot in light of the claim amendments. More particularly, Claims 1 and 11 have been cancelled. Claims 2, 3, 5-10, and 16-20 now depend upon allowable independent Claim 44 (Claim 42 rewritten in independent form). Accordingly, Claims 2, 3, 5-10, and 16-20 are, by definition, also allowable.

With regard to dependent Claims 12-14, Applicants respectfully request the Examiner to reconsider this rejection. These claims depend from independent Claim 36, which the Examiner correctly noted is not anticipated by Koschany et al. by not rejecting this claim. As dependent claims from an allowable independent claim, Claims 12-14 are, by definition, also allowable.

With regard to independent Claim 21, Koschany et al. at least fail to teach a support material selected from the group consisting of metal oxides, carbides, nitrides, niobium, zirconium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one the foregoing support materials. Rather, Koschany et al. teach support materials comprising carbon fibers, glass fibers, or fibers comprising organic polymers. (Col. 2, lines 40-42). As with the rejections employing Hayashi et al. and Shimamune et al., this rejection does not address elements of Claims 21 and 22. In other words, Koschany et al. at least fail to teach any of the support materials listed in the Markush group claimed by Applicants. Since Koschany et al. fail to teach the support materials claimed by Applicants, Koschany et al. fail to teach each and every element of Applicants' independent Claim 21. As such, independent Claim 21 is not anticipated by and is therefore allowable over Koschany et al. Moreover, as a dependent claim from an allowable independent claim, Claims 22-23 are, by definition, also allowable.

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Similarly, with regard to independent Claims 25 and 27, it is noted that Koschany et al. fail to teach any of the support materials listed in the Markush group of each respective independent claim. As such, independent Claims 25 and 27 are not anticipated by and are therefore allowable over Koschany et al. Moreover, as a dependent claim from an allowable independent claim, Claims 26, and 28, 29, and 31, are by definition also allowable.

Claims 1, 5-14, 16-18, 20-23, 25-26, 27, 31-32 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 6,156,449 to Zuber et al. Applicants respectfully traverse this rejection.

With regard to Claims 1, 5-10, and 16-18, and 20, it is noted that the rejection is moot in light of the claim amendments. More particularly, Claims 1 and 11 have been cancelled. Claims 5-10, 16-18, and 20 now depend upon allowable independent Claim 44 (Claim 42 rewritten in independent form). Accordingly, Claims 5-10, 16-18, and 20 are, by definition, also allowable.

With regard to dependent Claims 12-14, Applicants respectfully request the Examiner to reconsider this rejection. These claims depend from independent Claim 36, which the Examiner correctly noted is not anticipated by Zuber et al. by not rejecting this claim. As dependent claims from an allowable independent claim, Claims 12-14 are, by definition, also allowable.

With regard to independent Claim 21, Zuber et al. at least fail to teach a support material selected from the group consisting of metal oxides, carbides, nitrides, niobium, zirconium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one the foregoing support materials. Rather, Zuber et al. teach a "catalyst layer on a substrate material which contains a proton-conducting polymer (ionomers), electrically conductive carbon particles and fine particles of at least one precious metal." (Abstract). They further teach any "carbon materials with high electrical conductivity and high surface area known in the area of fuel cells may be used as a material for the conductive carbon particles. Carbon blacks, graphite or activated carbons are preferably used." (Col. 6, lines 20-24). Again, as with the rejections employing Hayashi et al. and Shimamune et al., this rejection does not address elements of Claims 21 and 22. In other words, Zuber et al. at least fail to teach any of the support materials listed in the Markush group claimed by Applicants. Since Zuber et al. fail to teach the support materials claimed by Applicants, Zuber et al. fail to teach each and every element of

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Applicants' independent Claim 21. As such, independent Claim 21 is not anticipated by and is therefore allowable over Zuber et al. Moreover, as a dependent claim from an allowable independent claim, Claims 22-23 is by definition also allowable.

Similarly, with regards to independent Claims 25 and 27, it is noted that Zuber et al. fail to teach any of the support materials listed in the Markush group of each respective independent claim. As such, independent Claims 25 and 27 are not anticipated by and are therefore allowable over Zuber et al. Moreover, as a dependent claim from an allowable independent claim, Claims 26, 31, and 32 are by definition also allowable.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 33-35 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Pub. 2002/0098393 to Dine et al. in view of U.S. Patent No. 6,183,898 to Koschany et al. Applicants respectfully traverse this rejection.

As previously asserted by Applicants in their Amendment dated January 14, 2004, Dine et al. is not a valid reference over the present claims as it was filed after the filing of the date of the Provisional Applications to which this patent application claims priority. The Examiner found this argument not persuasive and stated "the effective filing date of the present application is September 27, 2001 and does not date back to the provisional application." (O.A., page 14).

Applicants respectfully direct the Examiner's attention to MPEP 706.02, more particularly to the section entitled "Determining the Effective Filing Date of the Application". Subsection D states that if the application properly claims benefit under 35 U.S.C. 119(e) to a provisional application, the effective filing date is the filing date of the provisional application for any claims which are fully supported under the first paragraph of 35 U.S.C. 112 by the provisional application. Applicants respectfully submit that the claims are supported under first paragraph of 35 U.S.C. 112 by Provisional Patent Application Serial Numbers 60/235,817 and 60/235,819. Therefore, the claims are entitled to an effective filing date of September 27, 2000, which is when the provisional applications were filed.

Nevertheless, even if the above-cited references were combined, the Examiner has still failed to make a *prima facie* case of obviousness. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all

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elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Applicants respectfully submit that the Examiner's secondary reference, Koschany et al., fails to teach all the elements relied upon by the Examiner. More particularly, Koschany et al. at least fail to teach support materials selected from the group consisting of metal oxides, carbides, metal nitrides, niobium, zirconium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one the foregoing support materials. Rather, Koschany et al. teach support materials comprising carbon fibers, glass fibers, or fibers comprising organic polymers. (Col. 2, lines 40-42). Since the above-cited references, either alone or in combination, fail to teach or suggest support materials listed in the Markush group claimed by Applicants, Applicants' independent Claim 33 is not obvious over and is therefore allowable in view of the above cited art. Moreover, as a dependent claim from an allowable independent claim, Claims 34 and 35 are, by definition, also allowable.

Claims 36, 38, and 41 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent No. 6,183,898 to Koschany et al. and further in view of U.S. Publication No. 2002/0107140 to Hampden-Smith et al.

In making the rejection, the Examiner relied upon Hampden-Smith et al. for teaching a "support selected from metal oxides." (O.A., page 11). More particularly, the Examiner stated that "Hampden-Smith teaches the equivalence of carbon and metal oxides as catalyst supports (par. 127). The metal oxide includes cobalt (par. 132)." (O.A., page 11) It is noted that par. 132 is discussing the active metal oxide that is employed on the carbon support (see par. 131), and not potential metal oxide supports. Actually, Hampden-Smith et al. fail to discuss the specific

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metal oxide supports taught in the present application. They focus on carbon supports (which are taught as preferred) and the active metal.

Koschany et al. teach support materials comprising carbon fibers, glass fibers, or fibers comprising organic polymers. (Col. 2, lines 40-42). Hampden-Smith et al. teach "carbon is a preferred material for the support phase, other materials such as metal oxides can be useful for some electrocatalytic applications". (par. 127) Applicants do not see a statement that carbon and metal oxides are equivalent supports, as stated in the Office Action. To the contrary, carbon is taught as preferred and discussed throughout the application.

For a 35 U.S.C. § 103 rejection to be proper, both a motivation to combine the references and an expectation of success must be present in the references. Here since carbon is preferred by Hampden-Smith et al. and discussed throughout their application, and since carbon is already used by Koschany et al., there is no motivation for Koschany et al. to replace carbon with metal oxide, i.e., to combine these references as suggested in the Office Action. No prima facie case of obviousness has been established. Since the above-cited art fail to teach or suggest a support material claimed by Applicants, independent Claim 36 is not obvious over and is therefore allowable over Koschany et al. in view of Hampden-Smith.

Claims 37, 39, 40, and 43 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent No. 6,183,898 to Koschany et al. and further in view of U.S. Patent No. 6,548,445 to Buysch et al. Applicants respectfully traverse this rejection.

In making the rejection the Examiner relied upon Buysch et al. for teaching "catalyst supports based on carbon, element oxides, element carbides or elemental salts in various use forms." (Col. 3, lines 15-18). Buysch et al., however, is directed to supported catalysts containing platinum and their uses in process for preparing diaryl carbonates. (Col. 1, lines 7-14) Buysch et al. is non-analogous art. They do not discuss electrodes or electrochemical cells. Here in addition to these being no motivation to combine these references, there is not expectation of success. Koschany et al. are concerned about gas diffusion electrodes, there is no teaching, suggestion, or motivation provided as to why an artisan would rely on a process for making diaryl carbonates to change a support in an electrode, and no expectation of success. No prima facie case of obviousness has been established.

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It is further noted, with regard to independent Claim 37, Applicants respectfully submit that the Markush group of Claim 37 does not claim carbides support materials as alleged by the Examiner. Rather, the support material is selected from the group consisting niobium, tantalum, cobalt, cobalt superalloys, hafnium, tungsten, tungsten alloys, and mixtures comprising at least one the foregoing support materials. The above-cited references, either alone or in combination, fail to teach or suggest these support materials. Rather, Koschany et al. teach support materials comprising carbon fibers, glass fibers, or fibers comprising organic polymers. (Col. 2, lines 40-42). Buysch et al. teach "catalyst supports based on carbon, element oxides, element carbides or elemental salts in various use forms." (Col. 3, lines 15-18). Accordingly, independent Claim 37 is not obvious over and is therefore allowable over Koschany et al. in view of Buysch et al.

Comments on Response to Arguments

In the Response to Arguments the Examiner discusses conventional carbon materials and the potentials at which they are oxidizable. If the Examiner is taking official notice regarding conventional carbon materials, applicants respectfully request documentary evidence in accordance with MPEP 2144.03. If the Examiner is alleging this claim in element is inherent, a proper rejection based upon inherency requires a showing of a basis in technical reasoning that the property necessarily flows from the prior art, and is not established by mere probabilities or possibilities. Applicants state that "carbon conventionally employed as a diluent is readily oxidizable in the electrochemical environment..." (Page 4, lines 7-9) No evidence or basis in technical reasoning has been provided to support an inherency argument or official notice.


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It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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